FACTS

Environment
Ontario
Jim Bradley, Minister

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ANATOMY OF A PCB CLEAN-UP

At a public hearing starting this fall, Ontario's Environmental Assessment Board will invite public comment on the technology and site proposals for destruction of more than 40,000 gallons of high-level PCB oil and other contaminated material accumulated at a Smithville, Ontario, site.

ENSCO (Environmental Services Company, Inc.), of California, was chosen as destruction contractor by the Ministry of the Environment after a thorough review of alternate proposals.

If approval is granted, the contractor will be issued a Certificate of Approval to move mobile, high-temperature incineration facilities to destroy the PCB wastes at the site. This process will include continual monitoring of stack gases to ensure strict adherence to environmental safety standards.

The ENSCO system is called the MWP-2000 transportable incinerator system. It uses rotary kiln technology to destroy toxic wastes from solids, sludges or liquids.

Massive equipment will be erected on the site rather than risk transporting the contaminated materials to an off-site incineration system. All this equipment will be removed from the site when the PCB destruction is complete.

Background:

The PCBs are stored on the former site of Chemical Waste Management Limited, a now defunct firm which began operating a transfer station for PCB wastes in 1978. By 1985, the 2-acre site held more than 2,200 pieces of PCB-contaminated equipment, 40,000 gallons of high-level PCB oil as well as contaminated soil, resulting from spills and careless handling practices.

As the public grew increasingly concerned about the potential threat to human health posed by the abandoned site, the Ministry of the Environment took charge of the property. One concern was about the potential for the toxic chemical to spread to the town's drinking water well, located about 450 metres south of the facility. Engineering consultants Proctor and Redfern were retained to oversee the cleanup and construct a secure storage building until appropriate treatment or destruction of the materials could be approved.

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What are PCBs?

Polychlorinated biphenyls, more commonly known as PCBs, are man-made, organic chemicals that were used in such products as adhesives, paints, printing inks and plastics from the 1930's to the 1970's. Due to their excellent fire-retardant properties, PCB's were widely used as a coolant and insulator in electrical transformers. Approximately 635 million kilograms of PCBs were produced in North America before their manufacture was banned in 1977.

Today, the very properties which made PCBs useful in the past are responsible for their threat to the environment. The chemical stability of PCB's means they do not break down in the natural environment. Once PCBs have entered the food chain, they accumulate and increase in concentration in more complex life forms. While research about their specific health effects on humans is inconclusive, PCBs are suspected carcinogens.

In Ontario, no technology has yet been approved for the destruction of high-level concentrations of PCB wastes. At many locations across Ontario, these wastes are currently being stored in anticipation that a PCB destruction facility will be approved and become operational in the near future. Low-level liquid PCB wastes are currently treated by a chemical process.

Progress To Date: Initial Clean-Up Completed

The initial phases of cleanup at the Smithville PCB storage site have been successfully completed. In addition, temporary storage buildings were constructed, one with tanks to contain the PCB oil and another to store PCB contaminated material. In order to contain all PCB-contaminated materials and prevent rainwater from coming into contact with PCB-contaminated soil and entering area groundwater, the consultant has also covered the site with a plastic membrane.

The final phase of cleanup will involve high-level PCB destruction and securing of the site. The total cost of the operation is expected to be about $12 million.

Early-Warning Monitoring Wells

In November 1986, four monitoring wells designed to provide early warning of the spread of PCB contamination were drilled around the site. In samples carried out by the hydrogeological consultant in February 1987, a heavy, oily material was found at the bottom of the monitoring well to the northeast of the site. Laboratory analysis of the sample revealed a high-concentration of PCB. Analysis of the early-warning well located about 150 metres south of the storage site found trace levels of PCB-wastes, at 480 parts per trillion (ppt). Environment Ontario's drinking water guidelines for PCBs is 3,000 ppt.

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An extensive sampling program of municipal and private water wells was undertaken immediately following this finding; to date, no PCB contamination has been found in these supplies. The early-warning observation network was also expanded and, along with the municipal water supply, and private water well is sampled on a regular basis.

Smithville Water Pipeline Project

Although samples continue to give a clean bill of health to Smithville water supplies, there has been a growing public concern about the potential threat to human health posed by groundwater migration of PCB material from the storage site. Environment Ontario has responded to this concern with 100 per cent funding for a 12-kilometre water pipeline from Grimsby to Smithville. The project is currently being phased in.

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